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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

TECHNICAL MEMORANDUM. 40

GLOSSARY OF TERMS USED IN FLYING BOAT HULL CONSTRUCTION.

By

Captain David Nicolson.

Taken from
The Aeronautical Journal, August, 1921.

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GLOSSARY OF TERMS USED IN FLYING BOAT HULL CONSTRUCTION.*

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Afterbody.	The part of a boat abaft the midship section.
Alleyway.	Fore and aft passage under deck, or hood.
Amidships.	The center fore and aft line of a boat.
Apron.	A piece of timber fitted to aft side of stem to form backing for plank ends.
Athwart.	Transversely, at right angles to fore and aft.
Base Line.	In N.A. a level line near the keel, from which all heights are measured perpendicular to it, sometimes called datum line.
Beam.	The transverse member to support the deck, and tie sides. The breadth of a boat.
Beam and Length.	The proportion of a boat's beam bears to her length varies according to her type.
Bilge.	The round in a boat's timbers or frames where they begin to approach a vertical direction.
Bilge Keelsons.	Stout pieces of timber or metal sections fitted inside a boat in a fore and aft direction along the bilge to strengthen her longitudinally.
Bilge Strakes.	Planks or plates worked longitudinally forming outer skin along the bilge, or over the heads and heels of the frames.
Bilge Water.	The water inside a boat, which lies in the bottom.
Blisters.	Unsightly bladders on paint are generally caused by putting new paint upon the top of old, or using very thick paint.
Boat Chocks.	Wood members cut to shape of thwartship section of boat where fitted.
Body.	Part of a boat's hull, as fore-body, middle-body and after-body.

* Taken from the Aeronautical Journal, August, 1921.

Body Plan.	The plan which contains the cross sections of a boat's lines.
Bottom	Usually understood as the part of a boat below the water line.
Box Scarf.	A method of joining two pieces of timber by letting each into the other one-half its own thickness.
Bulkheads.	The athwartship partitions which separate a boat into compartments, etc. Fore and aft partitions are also termed bulkheads.
Bulwark.	The side of a boat above the deck.
Butt.	The joining or meeting of two pieces of wood endways. Butt and butt means that two planks meet end to end, but do not overlap.
Buttock Lines.	Planes in a fore and aft direction, showing the outline of vertical fore and aft sections.
Boot Top.	The portion of the surface coated with anti-fouling composition above the water level.
Battens.	Temporary fore and aft members around which the timbers are bent.
Bollard.	A vertical post, or fitting forming posts, in wood or metal for making fast cable, etc.
Breasthook.	A strong wood or metal knee fitted horizontally to stem.
Buttstraps.	A wood or metal doubling for connecting end of planks, or strakes of plating.
Cambered.	When the keel, deck, or fin top has its ends lower than its center.
Cant frames.	The frames in the bow and quarter of a boat that are not square to the keel.
Carlines.	Members fitted in way of deck openings, i.e., half beams.
Carvel Built.	Built with the plank flush edge to edge.
Chine.	Where the top sides meet the bottom at an angle.

Clamps or Cramps.	A type of wedge vice, used in boat building to hold the planks together. Various contrivances of wood or metal used in fitting up a boat or in fixing parts in her construction.
To Clench.	To beat the end of a rivet until it forms a head, or to turn the end of a nail in so that it will not draw.
Cockpit.	A form of well in the deck.
Copper Fastened.	Fastened with copper nails or rooves and nails.
Caulking.	Driving cotton or other stopping into the seams, or in metal, clenching over edges to make watertight.
Ceiling.	The inside lining.
Coamings.	A raised frame fitted to and above the deck for hatches, or other openings.
Chain Girth.	The shortest distance measured round the hull from gunwale to gunwale.
Chain Plates.	A metal fitting rigidly attached to the hull to take shrouds.
Collars W. T.	Metal, wood, or other fitting round stringers, etc., where they pass through bulkheads or decks to make same W.T.
Composite.	The form of hull in which metal and wood construction are jointly used.
"D."	The capital letter "D" is used by naval architects to denote the displacement or total weight of the boat and her equipment, generally expressed in pounds or tons.
Dead Wood.	The solid wood worked on top of the keel forward and aft.
Deck.	The platforms supported on the beams.
Doubler.	To put one thickness of plank or plate over the other.
Dowel.	A hard wood or metal pin used for connecting timber on the edges of planks.
Dump.	A nail used in fastening plank to the timbers, as distinguished from a through bolt.

- Draught or Draft. The distance between the lowest portion of the boat and the L. W. L.
- Diagonal Ties. Strengthening members, which are fitted at an angle to the stringers or beams.
- Entrance. The fore part of a boat, the bow. A good entrance into the water means a long well formed bow.
- Fairing. A process by which the inter-sections of curved lines with other lines in the body plan, half breadth plan, and sheer plan are made to correspond.
- Fairleads. Holes in plank fittings or metal for ropes or wires to lead through, so that they run fairly and are not nipped or forced into a bight.
- False Keel. A piece of timber or metal fitted under the main keel to deepen it.
- Fastenings. The bolts, nails, etc., by which the framing and planking are held together.
- Fay, to To join pieces of timber together very closely. Plank is said to fay the timbers when it fits closely to it.
- Feather Edge. When a plank or timber tapers to a very thin edge, "Tapering to nothing."
- Fender. A buffer made of rope, wood, matting, cork, or other material to hang over the side of boat when she is about to come into contact with another boat or object.
- Floors. Transverse members connecting the heels of frames to bottom and keel.
- Flush Deck. When the deck has no raised or sunken part.
- Fore body. The fore part of a boat which is forward of the midship section.
- Frames. The transverse members to which the skin is fastened.
- Freeboard. The distance from W.L. to gunwale.
- Flare. When the breadth at the gunwale exceeds the breadth at L.W.L.

Fillet.	A packing or distance piece.
Filling.	A stopping for seams, etc.
Flat-Floored.	When the timbers and floors project from keel in a more or less horizontal direction.
Fore Foot.	The foremost part of the keel at its intersection with the stem.
Foot Rails.	Fore and afters of hard wood or metal fitted to deck to give foothold.
Floor Boards.	A light decking inside the hull.
Floor Peak.	A compartment next the stem.
Futtocks.	The timbers which abut above the floors.
Garboard.	The strake of plank, or plates, next above the keel into which it is rabbeted and bolted, or riveted.
Grommet.	A ring formed of a single strand of rope laid over three times.
Gussets.	A connecting piece.
Gunwale.	The fore and after at the extreme breadth under deck.
Gratings.	Open wood work on bottom for decking.
Gripe.	The fore part of the dead wood.
Gudgeons.	Metal eyebolts fitted to the stern post to receive the pintles of the rudder.
Half-Breadth Plan.	A drawing showing the horizontal sections or water lines of a boat by halves.
Hanging Knee.	Knees that help to keep the beams and frame together, one arm is fastened to the under side of a beam, the other to the frame.
Harpings.	Pieces of timber or battens that are fitted around the frames in an unbroken line to keep the frames in their places before the planks or plates are put on.

Hatches or Hatchways.	Openings in the deck.
Hatchway Coamings.	The raised frame above the deck upon which the hatches or hatch covers rest.
Heel.	The lower aft end of anything as heel of the frame.
Hogged.	The form of a boat when she has combered sheer.
Hogg Piece.	A piece of timber worked upon top of keel to prevent its hogging or rising in the middle.
Hull.	The boat as distinct from her superstructure.
Half Beams.	Beams that are cut to take openings.
Hawsepipe..	A pipe fitted through the top sides to form a fairlead for mooring rope.
Hold.	Space for stowing cargo.
Hollow Lines.	The horizontal lines that have deflections.
Intercostal.	Fore and afters fitted against the stem which are cut at the floors.
Joggle.	A notch or notches forming a box scarf to enable two pieces of wood, etc., to fit together. In metal boats where the one plate, or metal, overlaps the other, giving an inside fair surface.
Keel.	The fore and aft members in a boat to which the frames and garboard strake are fastened, or if a diagonal planked boat, where the planks end.
Keelson.	An inside keel fitted over the throats of the floors.
Knees.	Pieces of timber or iron shaped to strengthen particular parts of a boat. A hanging knee is the one fitted under the beams; a lodging knee is a knee fitted horizontally to the beams and shelf or deck beams. Floor knees are V-shaped like breast hooks.
King Plank.	Center plank of deck.

Lines.	A general term applied to the drawing or design of a boat as depicted by fore and aft lines, and cross sections. A boat is said to have "fine lines" when she has a low block coefficient.
Load Water Line.	The line of flotation when a boat is properly laden or ballasted.
Lap.	The edge of one plank over the edge of another.
Locker.	A receptacle built into the boat.
Limber.	A waterway.
Moulded.	The thwartship dimension of timber or frames.
Moulded Breadth.	The greatest breadth of a boat without the plank,
Moulds.	The skeleton templates to cut the frames by, or to hold the boat in shape while the timbers and stringers are being fitted in place.
Manhole.	A circular scuttle, the minimum diameter through which a man can pass.
Mould Loft.	A building in which the floor is painted dull black, and is used for laying off lines full size.
Midships.	The center of fore and aft lengths.
Mast Step.	The chock in which the wireless mast is housed.
Mortise.	A cut groove at a joint to take tenon.
Overhang.	The ends of a boat, which at the gunwale extend over the water, i.e., L.O.A. exceeds L.W.L.
Overheads.	Beams, moulding, etc., forming ceiling under deck.
Parcel.	To cover a rope with strips of canvas painted or otherwise. The canvas is wound round the rope and stitched or "served" with marline.
Pintles.	The metal hooks by which rudders are attached to gudgeon sockets.
Planking.	The outside skin of a boat; plank laid on the frames or beams of a boat whether inside or outside.

Plank Sheer.	The outside plank at the deck edge which reaches the timber or frame heads, and shows the sheer of the boat.
Port.	The left hand side of the boat looking forward.
Partners.	A doubling between beams to take deck fittings.
Pillar.	Vertical supporting members under deck.
Quarter.	Top sides between full abeam and aft center line.
Rabbet.	An angular channel or groove cut in the keel, stem or sternpost, etc., to receive the edges or ends of the plank.
Ribands.	Long pieces of plank or timber, sometimes called harpings, secured to the frames of a boat in a fore and aft direction, when she is building, and representing the dividing lines or geodetic lines.
Ribs.	The frames or timbers of a boat.
Rake.	At an angle to the vertical in a F. and A. direction.
Risings.	A fore and aft by which seats or other items are supported.
Rail.	The extreme F. and A. top line above water.
Scantlings.	The dimensions of all material used in the construction of a boat.
Scarph or Scarf.	A method of joining pieces of wood or metal by tapering their ends. A box scarph is when the ends are not tapered, but a half thickness cut out of each part so that when put together the parts form only one thickness.
Seam.	The line formed by the meeting of two planks or plates.
Shift of Butts.	The fore and aft distance between the ends of one line of plank or plate and that of the next below or above.
Side Keelsons.	Stiffeners fitted fore and aft on either side of the keel.

Skin.	The outside or inside planking of a boat.
Starboard.	The right hand side of the boat looking forward.
Stem.	The forward vertical continuation of the keel.
Stringer.	Strengthening fore and afters connected to frames or timbers.
Scantling Section.	A drawing of mid-section of a boat on which all scantlings of same are stated.
Scupper.	A freeing port.
Sole Beams.	Thwartship beams, supporting flooring.
Strake.	A fore and aft line of plank, or plating.
Sheer Strake.	The top line of planking or plating.
Sheer.	Fore and aft curve of gunwale.
Shelf.	A fore and aft member round deck inside planking to which timbers and beams are attached.
Sheathing.	Metal or wood skin fitted outside planking for additional protection.
Skin Girth.	The distance measured round planking from gunwale to gunwale.
Scuttle.	An opening which can be made W.T.
Stopping.	A substance used for making seams W.T. when not caulked.
Sternpost.	The vertical member where the planking terminates aft.
Siding or Sided.	The fore and aft dimensions of timbers, beams, etc.
Stopwater.	A soft wood dowel driven through dead wood at joint of same.
Spiling.	A method of setting out a curve from a straight line.
Through Bolt.	Through fastening. Fastening that ties several thicknesses of material.
Timbers.	The transverse ribs of a boat.

Transom.	The frame at the sternpost of a boat. The transverse board at the stern, which gives shape to the quarters and forms the aft end of the boat.
Transverse.	Athwartships. At right angles to the line of keel.
Tie.	Diagonal connecting and strengthening member.
Tumblehome.	Where the extreme breadth exceeds the breadth at deck.
Topsides.	The upper part of hull above W.L. excluding stem and stern.
Turtleneck.	A deck with excessive camber.
Trim.	The fore and aft inclination of hull about L.W.L.
Thwart.	A seat forming tie across the hull in the absence of beams.
Tenon.	A tongue at the end of a timber to fit into a mortise.
Throat.	The distance across the flat of a knee.
Timber Heads.	The upper ends of the frames.
Tuck.	Where hollow occurs in the form of the stern or quarters.
Ways.	Baulks of timber on which the cradle slides.
Well.	A sunken part of the deck usually termed cockpit.
Waterways.	Apertures to allow water to flow to bilge suction.
Waterplane.	The horizontal area of hull at water line.

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